

Materials and Failure Analysis

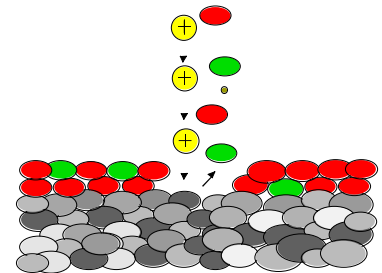
Glow Discharge Optical Emission Spectroscopy (GDOS)

Sulzer Innotec

It is becoming increasingly important to be able to analyse surfaces, coatings, intermediate layers and boundary layers. Glow Discharge Optical Emission Spectroscopy (GDOS) provides an excellent tool for doing this. Very accurate depth profile analyses showing elemental distribution can be conducted on galvanic, CVD, PVD and chemical coatings and overlays, as well as on passivated or nitrated surfaces. Sulzer Innotec also uses GDOS as a complementary tool to support other methods of analysis such as scratch testing, universal hardness testing, calo-tests and laser profilometry.

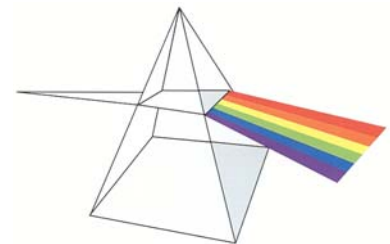
How does GDOS work?

In GDOS, a steady beam of Argon ions is directed at a surface where it collides with constituent atoms and knocks them out. These atoms are then excited in an electrical field so that they glow. The light, which is characteristic to the emitting element, is detected and analysed using a conventional optical emission spectrometer.



Advantages of the method

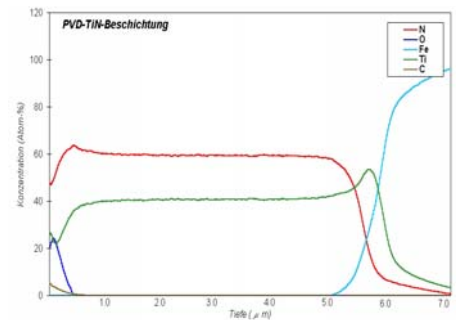
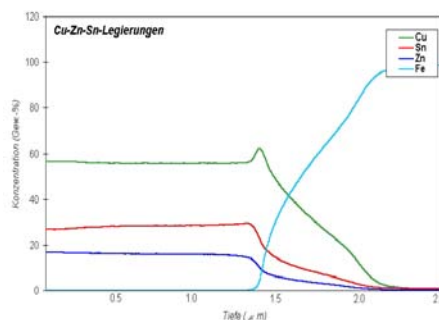
Glow discharge spectroscopy can be used to detect virtually all elements (including H, O, C and N) in quantities ranging from trace element to main constituent. High sputter rates mean that zones with thickness between 100nm and 100 µm can be analysed with a resolution of approximately 5 nm and an accuracy in Z of about 5 to 10%.



Samples

Samples should be conductive, have a relatively flat surface and be a minimum of 13mm in diameter and 0.1 mm thick.

Examples



Delivery

GDOS analyses can normally be delivered within 2-3 working days.